THE ADOLESCENT BRAIN

Before you are born you have about 525 billion neurons. As a child you have about 200 billion neurons, and as an adult you have about 100 billion neurons.

You cannot grow new neurons. Once they are gone, they are gone…..although the latest research indicates that a new neuron can created through aerobic exercise. Every time you take in new information (through your 5 senses) your brain puts a protein marker on an empty, or unused neuron. Then, if you sleep, within 7 to 12 hours the brain changes that protein marker to a dendrite (branch). That branch contains that one piece of information for life. That dendrite, however, can be used as a connector for other information. (problem solving)

It is during sleep that dendrites grow and your brain culls out unused and weak neurons, like weeding a garden. If you don't get enough sleep your brain will get clogged up and the protein markers will not have room to grow into dendrites. Naps work to begin the process of making dendrites.

Your brain does not begin its work until 1 ½ hours after you go to sleep. The actual branching takes place in deep sleep, not in REM, as previously thought. Reviewing material you want to learn, before you go to sleep, works very well. Branches use each other to pathway to other information. So, any branch you use for any information will help you connect with other information. Alzheimer's disease tends not to develop, not as strongly, or at all, in a well branched brain.

How can you raise your IQ? It can be done because IQ is a fluid thing, especially during your young years. IQ is a result of a extensive use of your Cerebral Cortex. So, plan many different experiences, travel, see new things, hear new music and sounds, taste new foods, feel new sensations, and smell new smells. Every new sense brought into your brain can build a new dendrite (branch). Make certain that you can recall and use the new things you learn, and that you actually learn these things. Music, Art, Places, People, Languages, are among the many new experiences that allow you to build new dendrites.

20% of men have male brains. 20% of females have female brains. Male brains get the gist of meaning, female brains tend to get details.

THE CEREBRAL CORTEX

Your brain has four different lobes. The lobe that separates us from all other animals is the Frontal Lobe, right behind the forehead. It is our decision maker, it is involved in speech, problem solving, anticipation new situations, and some memories. The four lobes are different but work together. This lobe can do only one thing at a time. It can learn new things, but, it cannot multitask. This lobe is not efficient. It uses a great deal of energy. The cortex does all the learning. (walking, talking, tying shoes, driving, using a fork/spoon). Learning is not a pretty sight. Learning is very clumsy. This lobe is only 6 neurons thick. It is large and thin, and layered around the rest of the brain like a thin accordion sheet.

THE HIND BRAIN (FISH BRAIN)

It runs the body; the heart, lungs, etc. One part of the hind brain actually paralyzes the muscles in your body so you don't act out during dreaming. The hind brain houses the RAS (reticular activating system) which is responsible for sorting our incoming sensory information and it tells you what you should focus on at any given time. This part of your brain matures by the time you are about 7 years old. At the time of maturation of the RAS, behaviors, such as bed wetting, sleep walking and attention problems tend to go away.

The three priority's of the hind brain are; physical needs met, novelty (variety) and self made choice.

ADD and hyperactivity occurs in the hind brain. Hyperactivity is when a child's system is running too slow. The child's hind brain does not make enough of the agonist (chemicals that speed up the brain) neurotransmitters. (Antagonists are those chemicals that slow down the brain) so the body runs slowly and the child tries to speed the system up. Hyperactivity normally goes away between 7 & 9 years old.

ADD never goes away. ADD is when your RAS works but not very well. ADD is when there is a very limited blood flow in the hind brain and the Dopamine

receptors are inefficient. It is a lifelong condition. It can be treated with behavior interventions and medication which adjusts the dopamine levels.

HYPOTHALAMUS

In adolescents this part of the brain is very strong and very active. Adolescents surround themselves with other adolescents and the hypothalamus behavior feeds off each other. These behaviors that are controlled by the hypothalamus are; anger, aggression, eating, thirst, sex drive, water balance, body temperature, and hormones. This is the Flight or Fight part of your brain. This is the survival part of the brain. The male hypothalamus is larger than the female hypothalamus. This is part of the reptilian brain.

THALAMUS

This part of the brain sorts sensory data. It makes sense of everything that comes in and sends the information to the proper place in the brain. If the information goes to the wrong place you have a hallucination. Hearing to hearing, seeing to the sight nerves in the brain, etc.

AMYGDALA

This is the 'mother' part of the brain. Only adults have this part of the brain. It is the part that gives you other options for your stressful behavior, other than anger and aggression. It is that part that allows you to understand a stressful situation and deal with it other than violence. Adolescents do not have a fully developed Amygdala.

HIPPOCAMPUS

This branch memorizes and places information into categories. This branch stores new memories. When you have Alzheimer's disease the hippocampus separates from the rest of the regions of the brain and you lose the ability to locate memories. To slow down, or prevent this process…..build dendrites…fill your brain! Don't give your brain parts any room to move

SPINAL CHORD

This part of the brain houses reflexes, relays information from the brain to the rest of the body and handles routine tasks. It is the most efficient part of the brain. It uses the least amount of energy. This branch can do anything that is learned. It can multitask. The Spinal Chord part of the brain is why you can walk, talk, snap your fingers, and blink your eyes all the same time….because those behaviors are learned and do not require concentration.

Windows of opportunity as a child's brain matures

Motor Development	********** *****	0 to 6 years
Emotional Control	** *****	1 to 3 years
Vocabulary	**********	1 to 6 years
Language	**********	1 to 10 years
Math/Logic	*********	1 to 4 years
Instrumental Music	**********	3 to 10 years

0 1 2 3 4 5 6 7 8 9 10 11

Age in years